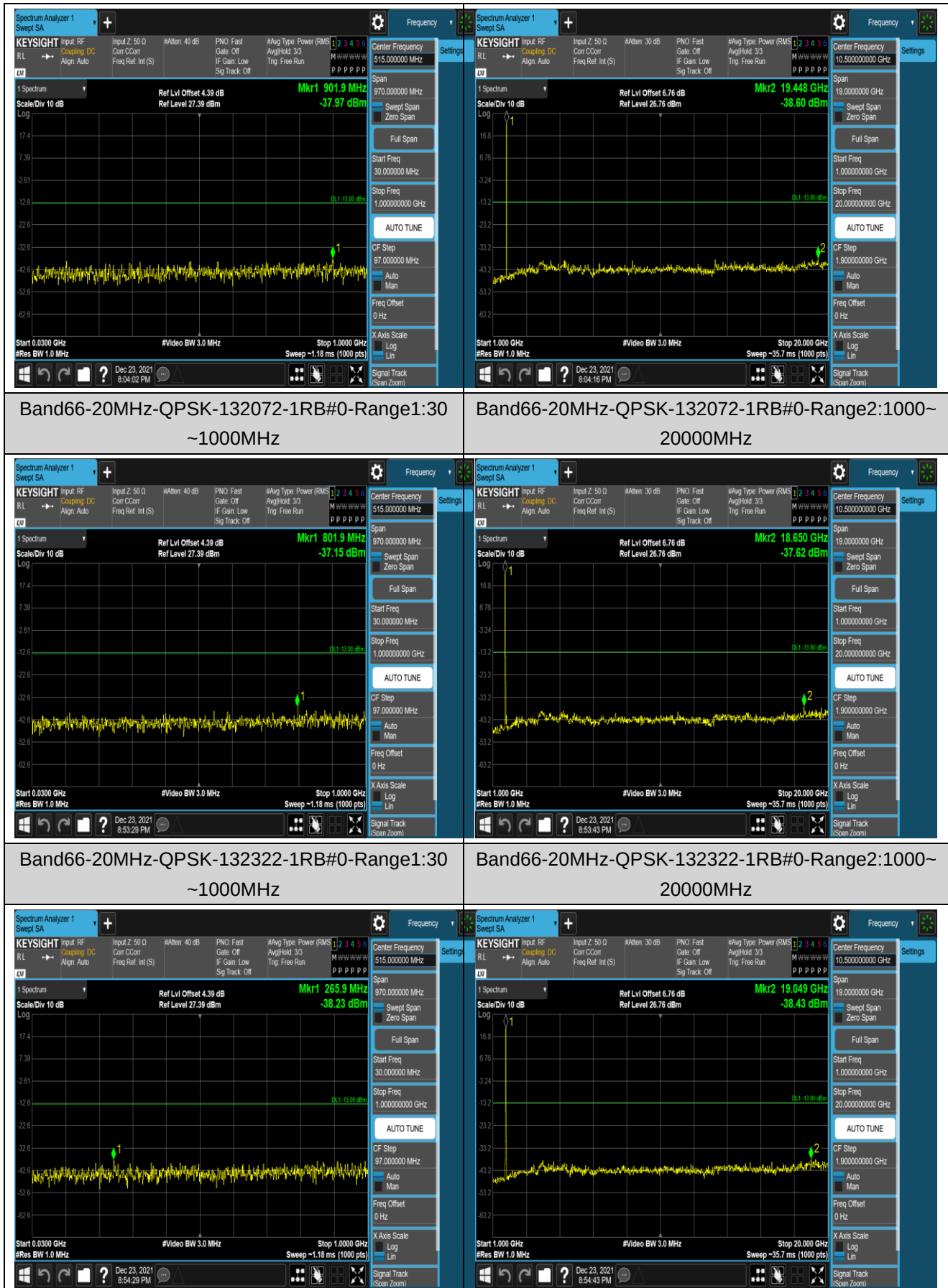
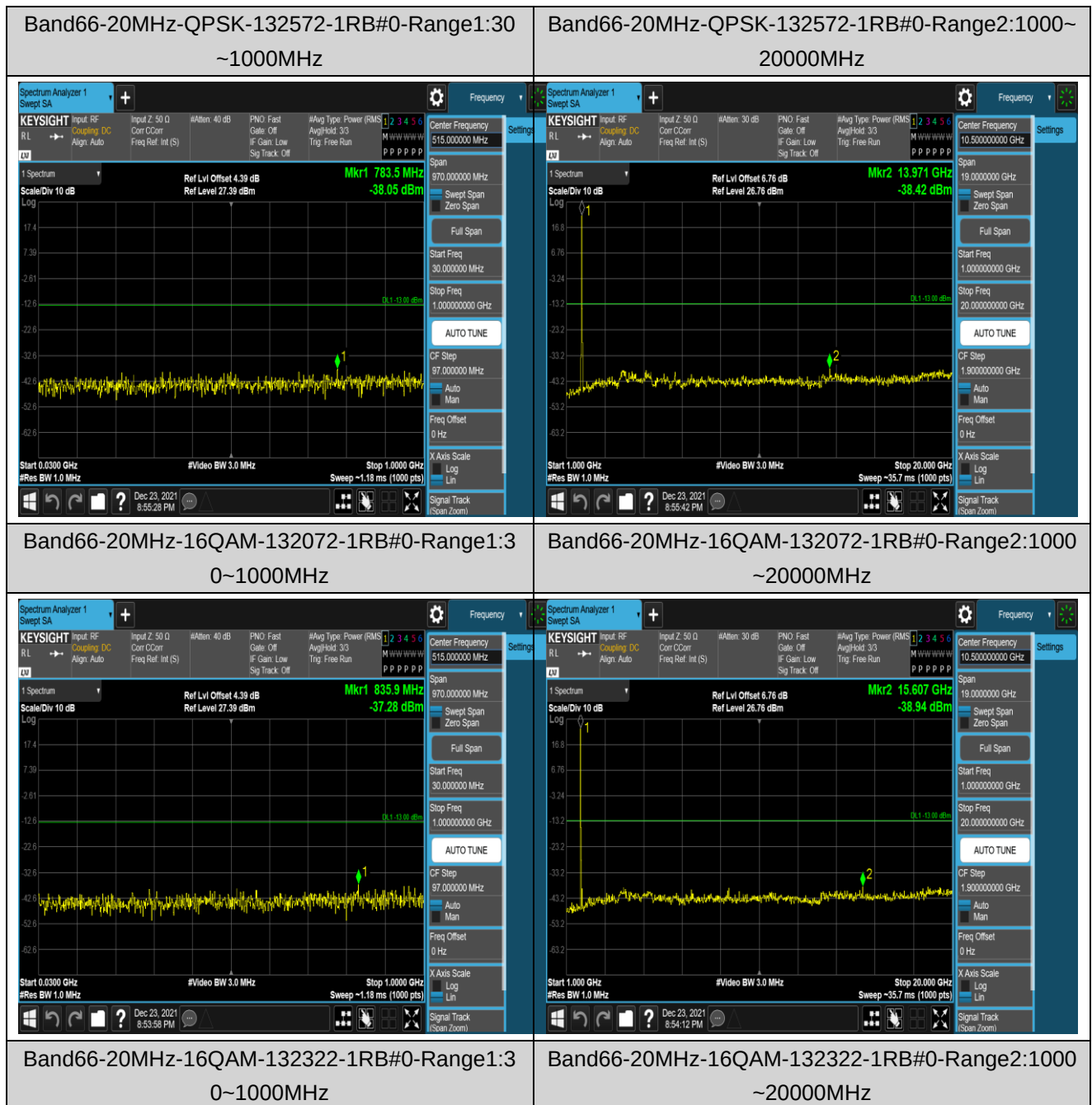
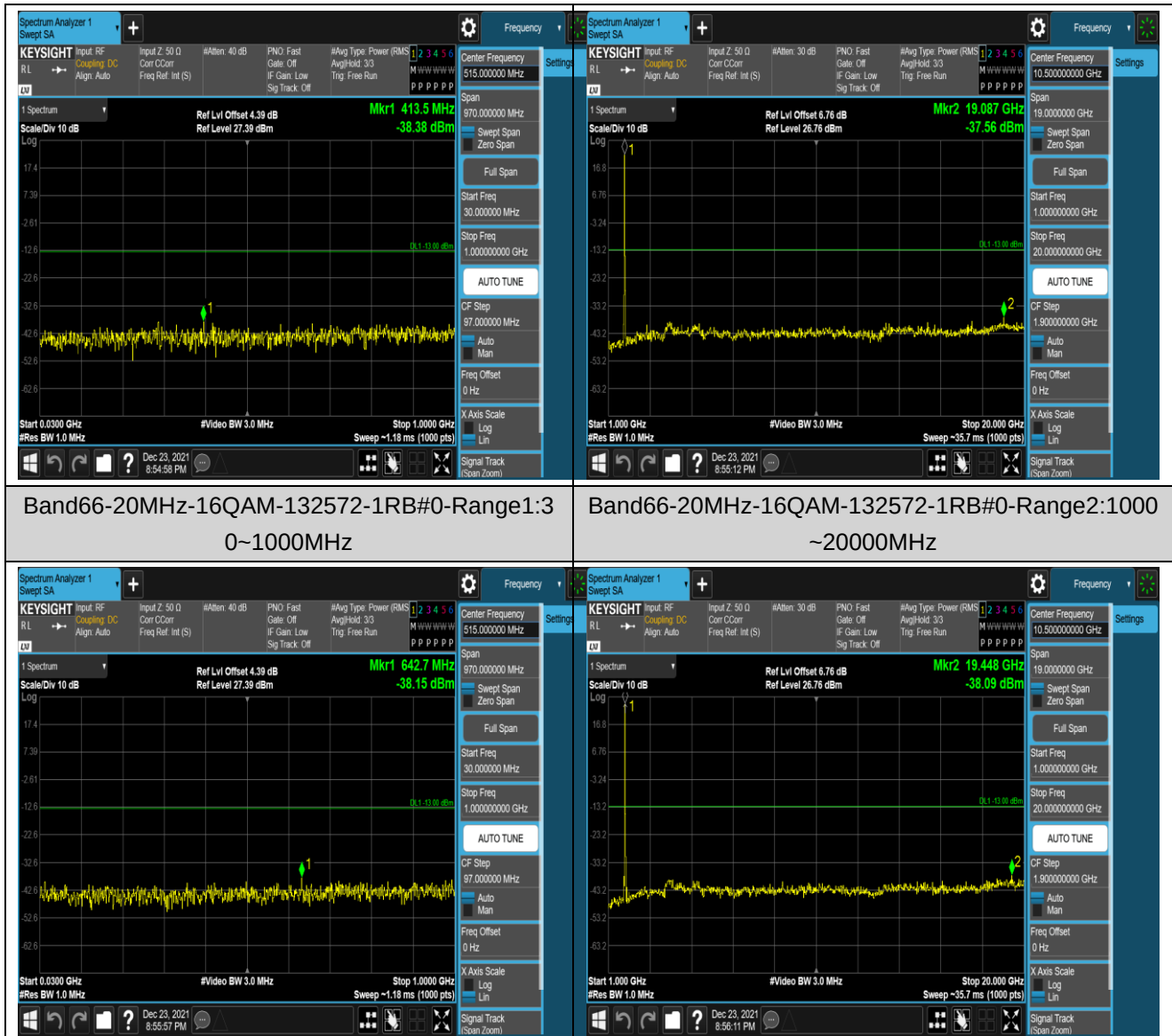








Appendix F: Frequency Stability

Test Result

LTE Band 2 part:

Reference Frequency: LTE Band 2 (10MHz) Middle channel=18900 Frequency=1880.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	48.11	0.025590	Within authorized band for Band 2	Pass
	-20	8.15	0.004335		
	-10	53.43	0.028420		
	0	45.20	0.024043		
	10	42.90	0.022819		
	20	37.47	0.019931		
	30	36.71	0.019527		
	40	38.80	0.020638		
	50	10.60	0.005638		
16QAM					
3.85	-30	37.31	0.019846	Within authorized band for Band 2	Pass
	-20	9.07	0.004824		
	-10	30.26	0.016096		
	0	12.19	0.006484		
	10	16.16	0.008596		
	20	49.05	0.026090		
	30	17.70	0.009415		
	40	41.18	0.021904		
	50	32.67	0.017378		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	20.07	0.010676	Within authorized band for Band 2	Pass
	3.85	2.66	0.001415		
	4.40	10.13	0.005388		
16QAM					
25	3.50	34.39	0.018293	Within authorized band for Band 2	Pass
	3.85	32.53	0.017303		
	4.40	4.55	0.002420		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 5 part:

Reference Frequency: LTE Band 5(10MHz) Middle channel=20525 Frequency=836.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-25.08	-0.029982	±2.5	Pass
	-20	-26.38	-0.031536		
	-10	-26.71	-0.031931		
	0	-25.31	-0.030257		
	10	-24.26	-0.029002		
	20	-31.46	-0.037609		
	30	-33.35	-0.039868		
	40	-36.66	-0.043825		
	50	-36.01	-0.043048		
16QAM					
3.85	-30	-12.42	-0.014848	±2.5	Pass
	-20	-5.54	-0.006623		
	-10	2.53	0.003025		
	0	8.35	0.009982		
	10	9.83	0.011751		
	20	8.48	0.010137		
	30	13.69	0.016366		
	40	19.13	0.022869		
	50	20.00	0.023909		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-17.91	-0.021411	±2.5	Pass
	3.85	-6.78	-0.008105		
	4.40	-23.35	-0.027914		
16QAM					
25	3.50	-24.46	-0.029241	±2.5	Pass
	3.85	-33.36	-0.039880		
	4.40	-18.88	-0.022570		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 7 part:

Reference Frequency: LTE Band 7(10MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-7.38	-0.002911	Within authorized band for Band 7	Pass
	-20	6.12	0.002414		
	-10	15.61	0.006158		
	0	25.31	0.009984		
	10	33.30	0.013136		
	20	27.38	0.010801		
	30	12.22	0.004821		
	40	8.57	0.003381		
	50	8.31	0.003278		
16QAM					
3.85	-30	22.70	0.008955	Within authorized band for Band 7	Pass
	-20	40.54	0.015992		
	-10	-6.15	-0.002426		
	0	28.32	0.011172		
	10	18.37	0.007247		
	20	53.97	0.021290		
	30	33.40	0.013176		
	40	45.98	0.018138		
	50	-14.98	-0.005909		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-15.23	-0.006008	Within authorized band for Band 7	Pass
	3.85	-6.42	-0.002533		
	4.40	-13.35	-0.005266		
16QAM					
25	3.50	37.92	0.014959	Within authorized band for Band 7	Pass
	3.85	22.34	0.008813		
	4.40	44.29	0.017471		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 12 part:

Reference Frequency: LTE Band 12(10MHz) Middle channel=23095 Frequency=707.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-10.77	-0.015223	Within authorized band for Band 12	Pass
	-20	-8.38	-0.011845		
	-10	-8.55	-0.012085		
	0	-12.60	-0.017809		
	10	-9.31	-0.013159		
	20	-10.34	-0.014615		
	30	-12.49	-0.017654		
	40	-16.99	-0.024014		
	50	-20.80	-0.029399		
16QAM					
3.85	-30	-8.40	-0.011873	Within authorized band for Band 12	Pass
	-20	-5.29	-0.007477		
	-10	-2.32	-0.003279		
	0	4.78	0.006756		
	10	6.91	0.009767		
	20	6.61	0.009343		
	30	-6.64	-0.009385		
	40	-1.67	-0.002360		
	50	3.99	0.005640		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-13.32	-0.018827	Within authorized band for Band 12	Pass
	3.85	-4.69	-0.006629		
	4.40	-11.03	-0.015590		
16QAM					
25	3.50	-17.31	-0.024466	Within authorized band for Band 12	Pass
	3.85	-23.52	-0.033244		
	4.40	-12.92	-0.018261		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 66 part:

Reference Frequency: LTE Band 66 (10MHz) Middle channel=132322 Frequency=1745.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-7.55	-0.004327	Within authorized band for Band 66	Pass
	-20	-2.63	-0.001507		
	-10	6.72	0.003851		
	0	11.33	0.006493		
	10	2.35	0.001347		
	20	-6.69	-0.003834		
	30	-10.29	-0.005897		
	40	4.99	0.002860		
	50	8.51	0.004877		
16QAM					
3.85	-30	13.66	0.007828	Within authorized band for Band 66	Pass
	-20	17.01	0.009748		
	-10	23.53	0.013484		
	0	34.02	0.019496		
	10	41.51	0.023788		
	20	13.68	0.007840		
	30	25.21	0.014447		
	40	29.75	0.017049		
	50	32.17	0.018436		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-16.81	-0.009633	Within authorized band for Band 66	Pass
	3.85	-13.30	-0.007622		
	4.40	-10.67	-0.006115		
16QAM					
25	3.50	7.21	0.004132	Within authorized band for Band 66	Pass
	3.85	7.01	0.004017		
	4.40	10.56	0.006052		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

Appendix G: Modulation Characteristics

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result	Verdict
Band2	20MHz	QPSK	18900	100RB#0	PASS	PASS
Band2	20MHz	16QAM	18900	100RB#0	PASS	PASS
Band5	10MHz	QPSK	20525	50RB#0	PASS	PASS
Band5	10MHz	16QAM	20525	50RB#0	PASS	PASS
Band7	20MHz	QPSK	21100	100RB#0	PASS	PASS
Band7	20MHz	16QAM	21100	100RB#0	PASS	PASS
Band12	10MHz	QPSK	23095	50RB#0	PASS	PASS
Band12	10MHz	16QAM	23095	50RB#0	PASS	PASS
Band66	20MHz	QPSK	132322	100RB#0	PASS	PASS
Band66	20MHz	16QAM	132322	100RB#0	PASS	PASS

Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.

Test Graphs

